I am not able to follow Dr. Boas's deduction of a formula for r in this case, and it does not appear to give the true correlation r of the two variables.

KARL PEARSON

BIOMETRIC LABORATORY,
UNIVERSITY COLLEGE, LONDON,
June 6, 1909

THE DARWIN CELEBRATION AT CAMBRIDGE

TO THE EDITOR OF SCIENCE: I shall be obliged if you will allow me to contradict a statement which has been made in an American newspaper in reference to Professor Haeckel and the Darwin Celebration. The article in question was sent to me by a friend as a cutting and I am unable to give the name of the newspaper. The writer of an article entitled "Haeckel, the fighting scientist retires from Jena University," says: "He (Professor Haeckel) would have been glad to accept an invitation to the Cambridge celebration of the Darwin centenary—had he received it. None came, however, although a large number of such invitations have been sent to scientists who, to say the least, are no more distinguished than himself and to hundreds of scientific societies. It is strongly suspected that clerical prejudice has had a large share in this extraordinary omission. It is quite unjustifiable, for, whatever may be thought of Professor Haeckel's philosophic speculations, not even his enemies venture to deny his great service in the development of Darwinism."

The facts are these: A large number of universities, academies and learned societies were invited by the University of Cambridge to appoint delegates to attend the Darwin Celebration in June of this year. In response to this invitation the University of Jena appointed Professor Haeckel as its delegate. At a later date, after replies had been received from universities and other corporate bodies, several invitations were sent to individuals other than those already nominated as delegates. A short time ago Profesor Haeckel wrote to express his regret that ill-health rendered a visit to Cambridge impossible, and his successor in the chair of zoology, Professor Plate, was appointed in his stead. I need hardly add that if Professor Haeckel had not been appointed a delegate he would certainly have been invited as a private guest. I may state that some years since Professor Haeckel received from Cambridge University the honorary degree of doctor of science.

I am, Yours faithfully,

A. C. SEWARD
One of the Honorary Secretaries to the Darwin Celebration Committee; Professor of Botany in the University.
BOTANY SCHOOL,
CAMBRIDGE, ENGLAND

QUOTATIONS

VIVISECTION

LITERARY reference or allusion makes readable sometimes the barer facts of science. The vogue of Rudyard Kipling will render more popular a scientific cause to which he happens to lend his name. It is for that reason, rather than for the value of his statement, that we quote the poet as follows on a question of the day:

> The doctor is exposed to the criticism of persons who consider their own undisciplined emotions more important than mankind's most bitter agonies; who would cripple and limit research for fear research might be accompanied by a little pain and suffering. But if the doctor has the time to study the history of his own profession he will find that such persons have always been against him—ever since the Egyptians erected statues to cats and dogs on the banks of the Nile.

The opponents of vivisection ought to oppose murder, and therefore to be vegetarians. They should also object to forced labor and therefore never ride behind a horse. They should in sound logic oppose larceny and not drink milk. They should never allow an animal to be punished in process of being trained. In scientific experiment few animals are taken, compared to those killed for food or kept at forced labor all their lives. Most of them are unconscious. The question of when to use anesthetics must be left to science, since in a small but important fraction of the work drugs must be dispensed with; and it would be fatal to have ignorant outsiders concerned in so critical a decision. Such outsiders are cap-

able of judging sanely neither about the amount of pain involved nor the importance of the knowledge to be obtained. Says President Eliot of Harvard University:

> The humanity which would prevent human suffering is a deeper and truer humanity than the humanity which would save pain or death to animals.

Moreover, the experiments give knowledge which saves pain not only to millions of human beings, but in many cases to animals themselves. In tuberculosis, for instance, the men of science are fighting for cattle as well as for men; in lockjaw, for horses as well as for our own kind. The marvelous results in diphtheria have happily now become known to almost every mother. To stop animal experimentation would check the advance of surgery. It would take away our strongest weapon in the promising fight being waged against cerebro-spinal meningitis, bubonic plague, dysentery and malaria. It would reduce us to despair in the harder but still hopeful contest with cancer.—*Collier's Weekly.*

SCIENTIFIC BOOKS

The Manufacture of Explosives—Twenty Years' Progress. By Oscar Guttmann. 8vo, 84 pp., 11 illustrations. New York, The Macmillan Company. 1909. Price $1.10 net.

The major title of this book is identical with that of the well-known two-volume work by the same author which was published in 1895. The make-up of the new volume is similar to that of the older ones and it may properly be regarded as a supplement to them. The significance of the subtitle is not apparent on a close reading of the text, for the first installment begins with an historical résumé from 1250 to 1886, and this same method of treatment obtains throughout the book as new topics are introduced. Even taking 1886 as the point of departure, this date precedes the publication of the first volumes by nine years, so that there is necessarily some repetition in the supplement, but much of it is avoided by referring to the descriptions published in the earlier volumes. Nevertheless, this feature should be borne in mind when citing this author in litigation or for historical precedence and the statements of the supplement should be carefully compared with those of the major parts.

This condition has arisen from the fact that the present volume is a record of four Cantor lectures delivered before the Royal Society of Arts in 1908 and that such historical résumés were deemed necessary to properly introduce the topics. Lecture I. deals with black powder and other nitrate mixtures, chlorate mixtures, "metallic" explosives, picric acid, picrates and trinitrotoluol; lecture II. with nitroglycerine, dynamites, guncotton and nitrostarch; lecture III. with smokeless and flameless powders, fulminates, detonators and fuses, safety explosives and their use, particularly in mines; lecture IV. with the use of nitrocellulose in other industries, the construction, lighting and inspection of factories, accidents and precautions to be taken, the merits and demerits of explosives, stability of explosives and stabilizing agents, and finishes with a prophecy regarding the powder of the future.

The author holds a very poor opinion of nitrocellulose as a material from which to make smokeless powder, though all smokeless powders now adopted for military and naval use are composed of nitrocellulose alone or mixed with nitroglycerine, and he predicts that a stable nitro-compound of the aromatic series alone, or in conjunction with nitroglycerine, will come into use so soon as some government finds the courage to make the change. He likewise regards picric acid, which has been adopted by almost every country as a disruptive agent, under names such as melinite, lyddite, shimose powder, ecrasit and others, as a treacherous substance and expresses the hope that we shall some day give up its use.

Considering the use of explosives in mines, he points out the difficulty of determining what makes an explosive safe in fire damp. Thus since mercuric fulminate ordinarily does not ignite fire damp, while black powder does the Prussian Commission state that the more rapid the explosion the safer the explosive, yet certain black powder mixtures like bob-